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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/614,195

07/08/2003

Yuzo Hirayama

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EXAMINER

MOON, SEOKYUN

ART UNIT

PAPER NUMBER

2629

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/614,195	<b>Applicant(s)</b> HIRAYAMA ET AL.	
	<b>Examiner</b> SEOKYUN MOON	<b>Art Unit</b> 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 18 August 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>07/20/2005</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Status of Claims***

1. In the previous Office Action, claims 1-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamagishi (JP Pub. 2002-328335) in view of Yuji (JP Pub. 08-101367) and are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi (JP Pub. 2002-072135) in view of Yuji.

### ***Response to Arguments***

2. The Applicant's arguments regarding the rejections of claims 1-18 over Hamagishi in view of Yuji have been fully considered and are persuasive. Accordingly, the rejections of claims 1-18 over Hamagishi in view of Yuji have been withdrawn.

Regarding the rejections of claims 1 and 9, the Applicant [Remarks: pg 4 2<sup>nd</sup> paragraph – pg 5 1st paragraph] requested Examiner to provide documentary evidence demonstrating that it is well known in the art to use sub-pixels having different colors to create a color image.

In response to the Applicant's request, Examiner respectfully submits the following references. Examiner respectfully submits that these references were disclosed in Information Disclosure Statements submitted by the Applicant and were the prior arts cited by the Examiner in the previous Office Actions.

US 6,603,504 –Fig. 4a

US 2003/0016444 – Fig. 2a-1

JP Pub. 08-101367 – Drawing 2

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JP Pub. 07-248467 – Drawing 2

JP Pub. 07-248468 – Drawing 26

The Applicant further argued [Remarks: pg 5 2<sup>nd</sup> paragraph], "*Furthermore, while the Office Action relies on Yuji as allegedly teaching arranging sub pixels on a screen, it does not specifically discuss if or how Yuji teaches horizontally arranged sub pixels. See id. Indeed, Yuji fails to teach or suggest horizontally arranged sub pixels as recited in claims 1 and 0. For example, drawing 2 shows that Yuji's control picture element part 11 includes picture element parts arranged in the lengthwise direction.*".

Examiner respectfully disagrees.

Examiner respectfully submits that regardless of whether the control picture element part 11 includes picture element parts 5 in the lengthwise direction or not, the picture element parts 5 included in each row of the picture element parts 5 are arranged horizontally.

For the foregoing reasons, Examiner respectfully submits that the Applicant's arguments regarding the rejections of claims 1 and 9 are not persuasive.

Currently, all of the rejections under 35 U.S.C 103(a) over Kobayashi in view of Yuji are maintained.

### ***Information Disclosure Statement***

3. All the documents cited in the information disclosure statement (IDS) filed on July 20 have been acknowledged and considered by Examiner. A copy of the form PTO-1449 is included in this correspondence.

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***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 1-18** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi in view of Yuji.

As to **claim 1**, Kobayashi teaches a 3D image reproduction apparatus [abstract lines 1-2] comprising:

a display (“*11*”) [drawing 2 and par. (0027)] including a screen on which a plurality of pixels (the display elements included on the “*screen 14*”) are arranged to display synthesis parallax images in units of arrayed sub regions, and parallax information is assigned to each of the pixels in units of horizontally arranged pixels [drawing 2]; and

an optical system (“*slit array*”, “*pinhole array*”, or “*micro-lens array 12*” ) [drawing 2 and par. (0027)] arranged in front of the screen of the display, forming a 3D image by an integral photography system [par. (0030)] or a beam reproduction system from synthesis parallax images displayed on the screen in units of arrayed sub regions [par. (0029)].

Kobayashi does not expressly teach each of the pixels including three sub pixels that differ in color.

However, Examiner takes official notice that it is well known in the art to use sub pixels having different colors to create a color image, instead of using pixels having different colors.

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Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify each of the pixels of the display of Kobayashi to include three sub pixels that differ in color, in order to reduce the size of a display element capable of displaying any color, and thus to improve the resolution of the display (i.e. using three sub pixels to create a color instead of using three pixels).

Kobayashi as modified above does not expressly teach the sub pixels being laid out so that the adjacent sub pixels differ in color.

However, Yuji teaches an idea of arranging sub pixels on a screen of a 3D image reproduction apparatus [abstract], wherein adjacent sub pixels differ in color [drawings 1 and 2].

It would have been obvious to one of ordinary skill in the art at the time of the invention to replace the sub pixel arrangement of the screen of Kobayashi as modified above, with the sub pixel arrangement of the screen of Yuji, so that adjacent sub pixels differ in color, in order to provide uniform color distribution on the images to be displayed, and thus to prevent image degradation.

As to **claim 2**, Kobayashi as modified by Yuji teaches the synthesis parallax images [Kobayashi: pars. (0029) and (0030)] comprising images ray-traced in units of the sub pixels (Kobayashi: the device-user of the display of Kobayashi observes a three-dimensional image by tracing light rays backward from a viewing position to the light source).

As to **claim 3**, Kobayashi as modified by Yuji teaches the synthesis parallax images comprising images synthesized from a plurality of parallax images in units of the sub pixels [Kobayashi: pars. (0029) and (0030) and drawing 2].

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As to **claim 4**, Kobayashi teaches the optical system comprising a pinhole array (“*pinhole array 12*”) [drawing 2 and par. (0027)] in which pinholes are arranged corresponding to the arrayed sub regions.

As to **claim 5**, Kobayashi teaches the optical system comprising a slit array (“*slit array 12*”) [drawing 2 and par. (0027)] in which slits are arranged corresponding to the arrayed sub regions.

As to **claim 6**, Kobayashi teaches the optical system comprising a micro-lens array (“*micro-lens array 12*”) [drawing 2 and par. (0030)] in which micro-lenses are arranged corresponding to the arrayed sub regions.

As to **claim 7**, Kobayashi as modified by Yuji does not expressly teach the optical system comprising a lenticular sheet.

However, as the Examiner acknowledges that specifying the type of the optical system as one of a pinhole array, a slit array, a micro-lens array, and a lenticular sheet is not a required design specification, but is an option out of many alternative design variations, it is an obvious matter of design choice to specify the type of the optical system as any one of a pinhole array, a slit array, a micro-lens array, or a lenticular sheet.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the apparatus of Kobayashi as modified by Yuji to use any one of a pinhole array, a slit array, a micro-lens array, and a lenticular sheet, as a component for the optical system of the apparatus, since any one of them would perform equally well at directing lights emitted from the screen to a viewer.

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As to **claim 8**, Kobayashi as modified by Yuji teaches sub pixels of the same color being laid out in a V-shaped pattern [Yuji: drawing 2].

Kobayashi as modified by Yuji does not teach sub pixels of the same color being laid out consecutively in a V-shaped pattern.

However, since arranging sub pixels having same color consecutively in a V-shaped pattern is not a required sub pixel arrangement for the display, but is merely one of various alternative arrangements of sub pixels for the display [Appl. specification pg 17-18 and figs 6 and 16], it is an obvious matter of design choice to specify the arrangement of sub pixels having same color in such ways.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use any one of various sub pixel arrangements such that adjacent sub pixels differ in color, since any one of various sub pixel arrangements would perform equally well at creating a three-dimensional image while solving a color flicker problem.

As to **claim 9**, all of the claim limitations have already been discussed with respect to the rejection of claim 1 except for the sub pixels having respectively rectangles and extending in a substantially vertical direction of the screen.

Kobayashi as modified by Yuji teaches the sub pixels having rectangles and extending in a substantially vertical direction of the screen [Yuji: drawing 2].

As to **claim 10**, all of the claim limitations have already been discussed with respect to the rejection of claim 2.

As to **claim 11**, all of the claim limitations have already been discussed with respect to the rejection of claim 3.



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As to **claim 12**, all of the claim limitations have already been discussed with respect to the rejection of claim 4.

As to **claim 13**, all of the claim limitations have already been discussed with respect to the rejection of claim 5.

As to **claim 14**, all of the claim limitations have already been discussed with respect to the rejection of claim 6.

As to **claim 15**, all of the claim limitations have already been discussed with respect to the rejection of claim 7.

As to **claim 16**, all of the claim limitations have already been discussed with respect to the rejection of claim 8.

As to **claim 17**, Kobayashi as modified by Yuji teaches sub pixels of the same color being laid out in a diagonal pattern [Yuji: drawing 2].

As to **claim 18**, all of the claim limitations have already been discussed with respect to the rejection of claim 17.

### ***Conclusion***

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to SEOKYUN MOON whose telephone number is (571)272-5552. The examiner can normally be reached on Mon - Fri (8:30 a.m. - 5:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on (571) 272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

December 3, 2008

/S. M./

Examiner, Art Unit 2629

/Sumati Lefkowitz/

Supervisory Patent Examiner, Art Unit 2629